I CLAIM

1. A system for scan converting ultrasound data from an acquisition format to a display format, the system comprising:

a look-up table having values corresponding to a spatial conversion from the display format to the acquisition format; and

a processor operable to identify acquired ultrasound data as a function of the values and operable to interpolate display values from the identified acquired ultrasound data.

2. The system of Claim 1 wherein the values comprise Polar coordinates, the look-up table entries indexed by integer Cartesian coordinates and wherein the processor is operable to bilinearly interpolate from the look-up table values using fractional offsets of Cartesian coordinates.

3. The system of Claim 1 wherein the processor is operable to determine display coordinates of interest and identify the acquired ultrasound data by inputting the display coordinates of interest into the look-up table.

4. The system of Claim 3 wherein the acquired ultrasound data represents a volume in the acquisition format, wherein the processor is operable to determine display coordinates for a plane through the volume as the display coordinates of interest;

further comprising a display operable to display a two-dimensional image representing the plane in the display format with the display values.

5. The system of Claim 3 wherein the acquired ultrasound data represents a volume in the acquisition format, wherein the processor is operable to determine

display coordinates for a plurality of rays through the volume as the display coordinates of interest;

further comprising a display operable to display a two-dimensional image of a Volume Rendering of at least a portion of the volume in the display format with the display values.

6. The system of Claim 5 wherein each of the display values is a function of an alpha blending of a plurality of acquired ultrasound data values and wherein the processor is operable to limit a number of acquired ultrasound data values blended as a function of a threshold such that scan conversion of other acquired ultrasound data values is avoided.

7. The system of Claim 1 further comprising an RGBA look-up table addressed by the display values, the RGBA look-up table operable to output an RGBA value corresponding to the display value.

8. The system of Claim 1 wherein the acquired ultrasound data comprises data associated with acquisition by a wobbler transducer array, wherein the values of the look-up table include corrections for shear distortion.

9. The system of Claim 1 wherein the look-up table values correspond to the spatial conversion from the display format to the acquisition format for at least one acquisition plane;

further comprising an additional look-up table corresponding to spatial conversion from the display format to the acquisition format across multiple acquisition planes.

10. The system of Claim 1 wherein the acquired ultrasound data represents a plurality of scan planes, the acquired ultrasound data of each scan plane in a Cartesian coordinate format, each of the scan planes positioned in the volume in a Polar coordinate format, where the look-up table values correspond to the spatial conversion from the Cartesian coordinate format to the Polar coordinate format relative to the scan plane positions in the volume.

11. The system of Claim 1 wherein the processor comprises a graphics processing unit.

12. The system of Claim 1 wherein the look-up table values each comprise a set of two fixed-point values, one Boolean Flag, and one Integer Sum, the two fixed-point values being Polar coordinates.

13. The system of claim 12 wherein the Boolean Flag indicates whether the set corresponds to a location outside of scanned region.

14. A method for scan conversion of ultrasound data from an acquisition format to a display format, the method comprising:

(a) identifying acquisition format coordinates with display format coordinates indexed to a look-up table;

(b) interpolating acquisition format coordinates stored in the look-up table; and

(c) interpolating display values from acquired ultrasound data based on the acquisition format coordinates determined in (b).

15. The method of Claim 14 wherein (a) comprises:

(a1) inputting Cartesian coordinates into the look-up table; and

(a2) outputting Polar coordinates interpolated from the look-up table in response to (a1).

16. The method of Claim 14 further comprising:

(d) determining display coordinates of interest;

wherein (a) comprises inputting the display coordinates of interest into the look-up table.

17. The method of Claim 16 wherein the acquired ultrasound data represents a volume in the acquisition format;

wherein (d) comprises determining display coordinates for a plane through the volume as the display coordinates of interest; and

further comprising:

(e) displaying a two-dimensional MPR image representing the plane in the display format as a function of the display values.

18. The method of Claim 16 wherein the acquired ultrasound data represents a volume in the acquisition format;

wherein (d) comprises determining display coordinates for a plurality of rays through the volume as the display coordinates of interest; and

further comprising:

(e) displaying a two-dimensional Volume Rendering of at least a portion of the volume in the display format as a function of the display values.

19. The method of Claim 18 wherein (e) comprises alpha blending a plurality of acquired ultrasound data values for each of the display values; and

further comprising:

(f) limiting a number of acquired ultrasound data values blended in (e) as a function of a threshold; and

(g) avoiding scan conversion of a plurality of acquired ultrasound data based on (f).

20. The method of Claim 14 further comprising:

(d) inputting the display values into an RGBA look-up table; and

(e) outputting RGBA values corresponding to the display values in response to (d).

21. The method of Claim 14 further comprising:

(d) acquiring the acquired ultrasound data with a wobbler transducer array;

wherein (a) comprises correcting for shear associated with (d) as a function of the values of the look-up table.

22. The method of Claim 14 wherein (a) comprises determining a spatial conversion from the display format to the acquisition format for at least one acquisition plane;

further comprising:

(d) spatially converting from the display format to the acquisition format across multiple acquisition planes with an additional look-up table.

23. The method of Claim 14 wherein the acquired ultrasound data represents a plurality of scan planes with the acquired ultrasound data of each scan plane in a Cartesian coordinate format and each of the scan planes positioned in the volume in a Polar coordinate format, wherein (a) comprises spatially converting from the Cartesian coordinate format to the Polar coordinate format relative to the scan plane positions in the volume.

24. The method of Claim 14 further comprising:

(d) generating the look-up table as a function of a spatial relationship of a display format with user configured acquisition parameters.

25. The method of Claim 14 further comprising:

(d) identifying whether the acquisition format coordinates are outside of scanned region with the look-up table.

26. The method of Claim 24 wherein (d) comprises generating a two-dimensional look-up table with acquisition format coordinates for each coordinate of a Cartesian volume.

27. The method of Claim 14 further comprising:

(d) Volume Rendering as a function of the display values as a function of time.